

DETAILED ACTION

1. This application is responsive to application number (10787182) filed on February 27, 2004. Claims 1-14 are pending and have been examined.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. Claims 1- 4, 6-11, and 13-14 rejected under 35 U.S.C. 103(a) as being unpatentable over Zakhor et al (US 5,699,121, hereafter Zakhor) in view of Kajiwara (US 6,337,929).

As per **claim 1**, Zakhor disclose image encoding apparatus (Fig 1 element 20) comprising:

conversion (Fig 1 element 60) means for converting coding target blocks within a coding target image into conversion information, the conversion information being atom information of the coding target image (column 4 lines 50-61);

quantization (Fig 1 element 100) means for quantizing the conversion information and generating quantized conversion information (col 6 lines 26-27); and

encoding (Fig 1 element 100) means for generating compression data by encoding the quantized conversion information based on the size of the block, and for generating a compression code used to generate the compression data for each block size (column 4 lines 40-58, column 5 lines 34 – 35, and col 6 lines 26-37; Zakhor discloses the present takes in an NxN input and codes the signal and further refers to the coding of block, which suggest that blocks of image data is being coded), wherein

the encoding means adopts the block size and compression code having a minimum bit rate among the plurality of generated compression codes over all of the plurality of block sizes, determines the block size which corresponds to the compression code having the minimum bit rate, and includes the block size and compression code corresponding to the minimum bit rate in a header information.

However, Zakhor does not explicitly teach the encoding means adopts the block size and compression code having a minimum bit rate among the plurality of generated compression codes over all of the plurality of block sizes, determines the block size which corresponds to the compression code having the minimum bit rate, and includes

the block size and compression code corresponding to the minimum bit rate in a header information.

In the same field of endeavor, Kajiwara discloses the encoding means adopts the block size and compression code having a minimum bit rate among the plurality of generated compression codes over all of the plurality of block sizes, determines the block size which corresponds to the compression code having the minimum bit rate, and includes the block size and compression code corresponding to the minimum bit rate in a header information (column 6 lines 30 – 50 and column 10 lines 46-52).

Therefore, it would have been obvious for one having ordinary skill in the art at the time of the invention to modify the invention of Zakhor to the compression mode and header of Kajiwara. The advantage is that the invention guarantees lowest possible bit rate.

As per **claim 2**, Zakhor discloses an image encoding apparatus according to claim 1, further comprising:

dictionary storage (Fig 1 element 80) means for storing a plurality of bases (col 4 lines 59-67),

wherein the conversion means converts the coding target image into the conversion information including index information for specifying a basis used for decomposition of the coding target image among the plurality of bases (col 4 line 59 – col 29),

a coefficient by which the basis specified by the index information is multiplied (col 5 lines 14-18), and

positional information for specifying a position where a pattern made by multiplying the basis specified by the index information by the coefficient is restored, based on a predetermined conversion rule (col 5 lines 16-18),

the encoding means generates the compression data including the compression codes based on a predetermined compression encoding rule (col 6 lines 26-27), and

for each block size, the encoding means executes processing in which the encoding means divides the coding target image into a plurality of blocks, extracts, for each of the plurality of blocks, the quantized conversion information the positional information of which is included in the block (col 5 lines 16-18 and col 6 lines 26-37), encodes, for each of the plurality of blocks, a flag for specifying existence of the quantized conversion information the positional information of which is included in the block (col 5 lines 16-18 and col 6 lines 26-37; the atom described in the art is the flag), encodes, for each of the plurality of blocks, the number of items of quantized conversion information each of which includes the positional information included in the block, converts the positional information of the quantized conversion information into inter-block positional information specifying a relative position in the block in which the positional information is included, and encodes the quantized conversion information (col 5 lines 14-28 and col 6 lines 22-37).

As per **claim 3**, arguments analogous to those presented for claim 1 are applicable to claim 3.

As per **claim 4**, arguments analogous to those presented for claim 2 are applicable to claim 4.

As per **claim 6**, Zakhor discloses an image encoding method to claim 4, wherein, the encoding step further comprises using arithmetic coding as the predetermined compression encoding rule and executing the arithmetic coding using predetermined probabilities stored in a table having different values according to the size of the block (col 6 lines 26-37).

As per **claim 7**, arguments analogous to those presented for claim 1 are applicable to claim 7.

As per **claim 8**, arguments analogous to those presented for claim 1 are applicable to claim 8.

As per **claim 9**, arguments analogous to those presented for claim 2 are applicable to claim 9.

As per **claim 10**, arguments analogous to those presented for claim 1 are applicable to claim 10.

As per **claim 11**, arguments analogous to those presented for claim 9 are applicable to claim 11

Regarding **claim 13**, arguments analogous to those presented for claim 6 are applicable for claim 13.

As per **claim 14**, arguments analogous to those presented for claim 8 are applicable to claim 14.

4. Claims 5 and 12 rejected under 35 U.S.C. 103(a) as being unpatentable over et al (US 5,699,121, hereafter Zakhor) in view of Kajiwara (US 6,337,929) in further view of Abe (US 5,805,737).

As per **claim 5**, Zakhor discloses an image encoding method according to claim 4, wherein

the quantization step further includes quantizing the coefficient included in the conversion information to generate the quantized conversion information including a quantized coefficient,(col 6 lines 26-30).

However, Zakhor does not explicitly teach when encoding the quantized conversion information includes extracting a minimum absolute value among absolute values of the quantized coefficients included in a plurality of items of quantized conversion information, determining a code relating to the minimum absolute value in the compression data, converting each of the quantized coefficients into a differential value between the absolute value for each of the quantized coefficients and the minimum absolute value, including the differential values in the compression code after encoding, and including a positive or negative sign for each of the quantized coefficients in the compression code after encoding.

In the same field of endeavor, Abe discloses when encoding the quantized conversion information includes extracting a minimum absolute value among absolute values of the quantized coefficients included in a plurality of items of quantized conversion information, determining a code relating to the minimum absolute value in

the compression data, converting each of the quantized coefficients into a differential value between the absolute value for each of the quantized coefficients and the minimum absolute value, including the differential values in the compression code after encoding, and including a positive or negative sign for each of the quantized coefficients in the compression code after encoding (Col 6 Ln 41-56).

Therefore, it would have been obvious to one having ordinary skill in the art at the time of invention was made to modify invention of with the invention of Abe. The advantage of combining the two inventions would be to provide better coding efficiency.

Regarding **claim 12**, arguments analogous to those presented for claim 5 are applicable for claim 12.

Conclusion

5. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to CHIKAODILI E. ANYIKIRE whose telephone number is (571)270-1445. The examiner can normally be reached on Monday to Friday, 7:30 am to 5 pm, EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Marsha D. Banks-Harold can be reached on (571) 272 - 7905. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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10/787,182
Art Unit: 2482

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